



# UNITED STATES PATENT AND TRADEMARK OFFICE

lcv  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,189	09/10/2003	Brian A. Hamman	QNX001	6325
7590	05/26/2005		EXAMINER	
PATENT DOMINION 555 REPUBLIC DRIVE SUITE 200 PLANO, TX 75074			VORTMAN, ANATOLY	
			ART UNIT	PAPER NUMBER
			2835	

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/666,189	HAMMAN, BRIAN A.
	<b>Examiner</b> Anatoly Vortman	<b>Art Unit</b> 2835

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) Responsive to communication(s) filed on 14 April 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) Claim(s) 52-97 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 52-91 is/are rejected.
- 7) Claim(s) 92-97 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

## **DETAILED ACTION**

### ***Amendment***

1. The submission of the amendment filed on 04/19/05 is acknowledged. At this point claims 1-51 have been cancelled and new claims 52-97 have been added.

### ***Claim Objections***

2. Claims 92-97 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot be dependent from another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 92-97 have not been further treated on the merits.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 52, 55, 68, 73-75, 77, 81, 85, 90, and 91, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Regarding claims 52, 55, 68, 75, 77, 81, and 85, the claim(s) contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it

pertains, or with which it is most nearly connected, to make and/or use the invention. Claims recite in the preambles that there is “no reservoir” in the cooling system. To the contrary, the Figures of the instant application show reservoirs as components of the cooling system. For example, Fig. 2 shows reservoir (206) and Fig. 3 shows reservoirs (300 and 312). Specification of the instant application does not discuss the absence of the reservoir(s) or any advantages of the cooling system without them.

Regarding claims 73, 74, 90, and 91, the specification contains only generic statement that the cooling liquid is a “propylene glycol based coolant”. The propylene glycol base coolant is any coolant, which contains propylene glycol. The specification is silent about the propylene glycol being a “base” or about the water being added or about the relative quantities of said propylene glycol and water or other ingredients. Thus, the specification lacks the support for the subject matter recited in the claims.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 53, 56-58, 76,78-80, 82-84, and 86-89, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The preambles of the claims recite that the cooling system having “a self-contained heat exchange unit”. The term “self-contained” renders the claims indefinite. The term is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree (i.e. degree of inclusion), and one of ordinary skill in the art would not be reasonably apprised of

the scope of the invention. It is not clear what the heat exchange unit should include and / or exclude in order to be “self-contained”.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 52-65, 68-72, 75-79, and 81-91, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by US/5,731,954 to Cheon.

Regarding apparatus claims 52-65 and 68-72, Cheon ('954) disclosed (Fig. 1, 2, 4, 5, and 6) a liquid cooling system (a heat transfer system) for a computer, as recited in the claims, said cooling (heat transfer system) deployed in a housing (Fig. 1), including: a heat exchange unit (a heat dissipater) (42, 44, 46, 48, 50) with multiple paths coupled to the conduit (72, 74), a heat transfer unit (contact unit) (12 or 30) interfacing with a processor (8) mounted on a mother board (4) and coupled through the conduit (72, 74) to the heat exchange unit (42, 44, 46, 48, 50), said heat transfer units (12, 30) and said heat exchange unit (42, 44, 46, 48, 50) are deployed in a single unit (2), a motor (94) driven self-priming pump (50) positioned in the lowest possible point in the heat-exchange unit (42, 44, 46, 48, 50) (Fig. 4, 5), and having an impeller (82) with curved blades, said impeller (82) is driven by said motor (94) via a shaft (88), said shaft (88) is disposed through the liquid in the dissipater, said motor (94) is positioned away from possible

contact with the liquid, said heat transfer (contact) unit (30) having an inlet (34) positioned below an outlet (36), said contact unit (30) transports heat from the heat generating component to the liquid, thereby producing heated liquid, which rises in the cavity of said contact unit (30) (inherently, due to the convection), wherein said heat exchange unit (42, 44, 46, 48, 50) having an input cavity (58) containing a dissipater with fins (64) coupled to said input cavity (58), said fins (64) create non-laminar flow (inherently) and an output cavity (60), said output cavity (60) is positioned below the input cavity (58), wherein said pump (50) and said impeller (82) are disposed in said output cavity (60) for transporting a coolant (C).

Regarding method claims 75-79 and 81-91, the method steps recited in the claims are inherently necessitated by the device structure as taught by Cheon ('954).

Regarding the limitation "no...reservoir" in the preambles of claims 52, 55, 68, 75, 77, 81, and 85, and regarding the limitation "self-contained heat exchanger" in the preambles of claims 53, 56, 76, 78, 82, and 86, these limitations have not been given patentable weight, because the subject matters recited in the bodies of the claims do not refer back to the preamble limitations. It has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 66, 67, and 80, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheon ('954) taken with either US/5,323,847 to Koizumi et al., (Koizumi) or with US/6,313,990 to Cheon.

Regarding claims 66 and 67, Cheon ('954) disclosed all, including a dissipater with fins (64), said fins (64) create non-laminar flow (inherently), but did not disclose a fan.

Koizumi disclosed a liquid cooling system for a computer (Fig. 1) having fans (45) to facilitate cooling of a heat exchanger (41).

Cheon ('990), also disclosed a liquid cooling system for a computer (Fig. 2) having a fan (50) to facilitate cooling of a heat exchanger (36).

Since all of the aforementioned references are from the same field of endeavor (liquid cooling systems), the purpose of fans disclosed by either Koizumi or Cheon ('990) would be recognized in the invention of Cheon ('954).

It would have been obvious to a person of ordinary skill in the cooling art at the time the invention was made to modify to Cheon ('954) according to the teachings of either Koizumi or Cheon ('990) so as to provide a fan for cooling the heat exchange unit (42) of Cheon ('954) in order to augment the rate of the heat exchange and to enhance the efficiency of the cooling system.

Regarding the method claim 80, the method steps recited in the claim are inherently necessitated by the device structure as taught by Cheon ('954) modified by either Koizumi or Cheon ('990).

11. Claims 73, 74, 90, and 91, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheon ('954) taken with US/4,610,222 to Goddard et al., (Goddard).

Regarding claims 73 and 74, Cheon ('954) disclosed all, and further that said coolant (C) is an automotive radiator fluid (column 5, lines 46+), but did not disclose that said coolant (C) is a propylene glycol based coolant.

Goddard disclosed an automotive radiator fluid, which contains a propylene glycol additive in order to inhibit oxidation and corrosion (column 4, lines 50-58).

Since inventions of Cheon ('954) and of Goddard are from the same field of endeavor (liquid cooling systems), the purpose of the propylene glycol additive disclosed by Goddard would be recognized in the invention of Cheon ('954).

It would have been obvious to a person of ordinary skill in the cooling art at the time the invention was made to provide said coolant (C) of Cheon ('954) with the propylene glycol additive as taught by Goddard in order to inhibit oxidation and corrosion of the components in the Cheon's ('954) cooling system.

Regarding the method claims 90 and 91, the method steps recited in the claims are inherently necessitated by the device structure as taught by Cheon ('954) modified by Goddard.

***Response to Arguments***

12. Applicant's arguments have been fully considered but they are not persuasive.

The Applicant's arguments pertained to the alleged absence of the reservoir and to the self-contained heat exchanger are moot in view of the new ground of rejection (see above).

Regarding the Applicant's arguments that “[I]n Cheon '954...Pump (P) is not self-priming and is not shaft driven” (see p. 14, section 12 of the amendment), the Examiner would like to direct the Applicant's attention to the fact that the body of the Cheon's ('954) pump is always submerged in cooling liquid and does not require any auxiliary suction devices.

Therefore said pump is self-priming. Further, the claims do not recite that the pump is “shaft driven” as alleged by the Applicant. The claims are broader than argued.

Further, the Applicant contends that “Figure 2 of Cheon '954 is in the nature of a schematic diagram and cannot be relied upon for physical placement of the devices. The examiner points to inlet (34) positioned above outlet (36) unit (30) in Figure 2. However the other heat transfer (contact) unit (12) in Figure 2 clearly shows inlet (18) and outlet (20) at the same height” (see p. 16, section 20 of the amendment). In response, the Examiner would like to direct the Applicant's attention to the fact that said Fig. 2 depicts the cooling liquid being drawn to the bottom of the reservoir (48) by gravity, and therefore it is possible to judge about the relative disposition of the inlet and outlet in vertical plane. As shown on the figure, the outlet (36) is positioned above the inlet (34) and, therefore, the circulation due to the convection will inherently be taking place.

Regarding the Applicant's arguments related to the propylene glycol, the arguments are moot due to the rejection of the relevant claims under 35 USC 122, first paragraph.

The remaining Applicant's arguments are moot due to the new grounds of rejection.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 571-272-2047. The examiner can normally be reached on Monday-Friday, between 10:00 am and 6:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Lynn Feild can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anatoly Vortman  
Primary Examiner  
Art Unit 2835

AV

